

**REMOVAL OF MOLECULAR ASSAY INTERFERENCES****ABSTRACT OF THE DISCLOSURE**

Methods and systems for removing masking agents from test samples, e.g., DNA-containing samples obtained from living subjects, when they are submitted for or subjected to molecular assays. The present invention allows molecular assays of nucleic acids in bodily fluids and excretions, such as urine, blood, blood serum, amniotic fluid, spinal fluid, conjunctival fluid, salivary fluid, vaginal fluid, stool, seminal fluid, and sweat to be carried out with greater sensitivity. The masking agents are suppressed by contacting a test sample with an amount of one or more divalent metal chelators and an amount of one or more chelator enhancing components. The amounts of the divalent metal chelator(s) and the chelator enhancing component(s) are selected such that interference of a masking agent on a molecular assay of a nucleic acid-containing test sample are suppressed, and upon contact with the divalent metal chelator(s)/chelator enhancing component(s), the masking agents are suppressed.